

Iowa, Kan., Minn., Mo., Neb.; 5th, Ark., Ga., Ill., Ind., Iowa, Kan., Ky., Md., Mich., Minn., Neb., N. C., Ohio, Pa., Tenn., Wis.; 6th, Ark., Conn., Dak., Del., Ga., Ill., Ind., Iowa, Ky., Me., Md., Mass., Mich., Minn., Neb., N. H., N. J., N. Y., N. C., Ohio, Pa., S. C., Tenn., Vt., W. Va., Wis.; 7th, Conn., Me., Md., Mass., Mich., Neb., N. H., N. J., N. Y., N. C., Ohio, Pa., Tenn., Utah, Vt., W. Va.; 8th, Conn., Kan., Mass., Mo., Neb., N. H., N. J., N. Y., Utah; 9th, Mass., Ohio; 10th, Iowa, Kan., Mo., Neb., N. C., Ohio, Va., Cal.; 11th, Ill., Ind., Iowa, Ky., Mo., Wis.; 12th, Ill., Ind., Ky., Mich., N. C., Ohio, Tenn., Wis.; 13th, Md., N. C., Tenn.; 14th, Me., Md., Mass., N. H., N. Y., N. C.; 15th, Ohio; 16th, Utah; 17th, Conn., Me., Mass., N. Y., Utah Ty., Vt.; 18th, Me., Mass., Utah Ty., Vt.; 19th, Ill., Utah Ty., Wis.; 20th, Dak., Me., Neb., Utah Ty., Wis., 21st, N. Y., Ill., Iowa, Kan., Mo., Neb., Utah Ty., Wis.; 22nd, Ark., Ill., Ind., Iowa, Kan., Mich., Miss., Neb., N. H., N. Y., Ohio, Tex., Wis.; 23rd, Ark., Tenn., Conn., Del., Ill., Ind., Kan., Md., Mass., N. H., N. J., N. Y., N. C., Ohio, Pa., S. C., Va., W. Va.; 24th, Ga., Ill., N. C., Ohio, S. C., Tenn.; 25th, N. H., N. Y., N. C.; 26th, N. Y., N. H., Pa., Vt.; 27th, N. Y., Mass., N. H., Utah Ty., Vt.; 28th, Conn., Mass., N. H., N. Y., Vt.; 29th, Ill., Iowa, Mo., Neb., N. H., Utah Ty., Wis.; 30th, Ill., Ind., Iowa, Neb., N. H., N. J., Ohio, Utah Ty., Wis.; 31st, Conn., Ill., Mass., Mich., Mo., Neb., N. H., N. Y., Ohio, Wis.

The frosts just enumerated were generally light, and the remarkable lateness of severe frosts is thus commented on by a few observers: at Vail, Iowa, on the 31st orange leaves still green; Fall River, Mass., cherry blossoms picked on the 21st; Freehold, N. J., wild violets in bloom on the 14th; Waterburg, N. Y., second crop of raspberries has been gathered; North Volney, N. Y., no killing frost up to the end of the month; Flushing, N. Y., apple trees in bloom and grass as green as in spring; Murphy, N. C., 31st, nothing injured by frost, beans in full bloom; Ringgold, Ohio, 31st, no severe frost as yet, vegetation uninjured; Chambersburg, Pa., no frost during the month, but a severe one Nov. 1st; Austin, Tenn., no heavy frost yet; Green Castle, Pa., flowers, tomatoes, pumpkins and locust trees are in bloom, no injurious frosts; Hulmerville, Pa., 24th, tomatoes ripe, and pepper plants in bloom; Lynchburg, Va., no frost during the month, tobacco almost matured for a second crop; Strafford, Vt., raspberries plentiful and ripe on the 15th, and strawberries in bloom, may-flowers seen on the 17th; Woodstock, Vt., colors of autumn foliage at their height one week later than usual; West Charlotte, Vt., red raspberries ripe 14th and 15th, dandelions in bloom on the 18th.

Ice was formed generally in connection with severe frost as follows: On the 3rd, Idaho; 4th, Dak., Iowa and Neb.; 5th, Minn., Dak. and Ill.; 5th, Iowa and Wis.; 7th, Mass., N. Y. and Utah Ter.; 8th, Utah Ter.; 10th, Neb.; 12th, Mich.; 16th, Utah Ter.; 19th, Me.; 20th, Iowa and Neb.; 21st, Iowa, Kansas, Mich. and Neb.; 22d, Ill.; 23d, Me., Conn., Mass., N. Y. and R. I.; 26th, Me.; 27th, N. H., Me. and Vt.; 28th, Conn., Mass., N. H., Idaho, Me. and Vt.; 30th, Neb. and Wis.; 31st, Mass. and Neb.

PRECIPITATION.

In General.—The general distribution of rain for the month is shown on chart No. III. The table in the lower left-hand corner gives the average precipitation in the various districts, and shows a very large excess in the Gulf and Atlantic States, the Upper Lake region, Northwest and in Oregon. This excess is to a great degree owing to the precipitation attending storms Nos. I, VII and X.

Special Heavy Rain.—The following notable cases of heavy rains that have been reported: 1st, Jacksonville, Fla., 8.29 in.; Quitman, Ga., (1st, 2d, 3d,) 8.90 in.; St. Marks, Fla., (1st, 2d, 3d,) 7.28 in.; 3d, Charleston, N. C., 1.75 in.; Duluth, Mich., 1.51 in.; Tybee Island, Ga., (2d, 3d,) 2.65 in.; Augusta, Ga., 2.13 in.; Savannah, Ga., 2.93 in.; Oglethorpe Bks., Ga., 2.56 in.; Mt. Forest, Canada, 2.33 in.; Mayport, Fla., 6.32 in., making a total of 11.08 in. in 10 days. 4th, Baltimore, Md., 2.74 in.; Cape Lookout, N. C., 1.85 in.; Lynchburg, Va., (3d, 4th,) 5.43; New Haven, Conn., (4th, 5th,) 4.05 in.; New York City, 4.02 in.; Philadelphia, Pa., 2.73 in.; Springfield, Mass., (4th, 5th,) 3.77 in.; Wilmington, N. C., (3d, 4th) 2.55; Washington, D. C., 3.98 in.; Gainesville, Ga., 2.30 in.; Fort Whipple, Va., 4.30 in.; Sandy Hook, N. J., 3.26 in.; Willets Point, N. Y., 2.17 in.; Accotink, Va., 4.00 in.; Barnegat, N. J., 2.08 in.; 5th, Boston, Mass., 4.00 in.; New London, Conn., 2.77 in.; Newport, R. I., 2.03 in.; Portland, Me., 1.71 in.; Thatcher's Island, Mass., 3.19 in.; Fort Adams, R. I., 2.90 in.; Fort Hamilton, N. Y., (4th, 5th,) 4.90 in.; 7th, Denison, Tex., 2.02 in.; 8th, Alpena, Mich., 2.06 in.; Fort Hamilton, N. Y., (8th, 9th,) 2.06 in.; 9th, Cape May, N. J., 1.97 in.; Philadelphia, Pa., 2.17 in.; Willets Point, N. Y., 1.25 in.; Barnegat, N. J., 2.83 in.; 10th, Eastport, Me., 2.05 in.; Alpena, Mich., (10th, 11th,) 5.17 in.; 11th, Buffalo, N. Y., 2.03 in.; 13th, in vicinity of San Diego, Cal., first rain of season occurred, being the heaviest rainfall for twenty years; it seems to have passed from the southeast to northwest over a tract of country thirty to forty miles wide, extending from the coast far beyond the mountains to the northeast. 14th, Beckenridge, Minn., 2.25 in.; Denison, Texas, 4.00 in.; 15th, Fort Gibson, Indian Ter., 1.81 in.; Galveston, Tex., (15th, 16th,) 3.68 in.; Fort Sill, Ind. Ter., 3.28 in.; 16th, Corsicana, Texas, 2.12 in.; Indianola, Texas, 4.11 in.; Shreveport, La., 2.29 in.; Baton Rouge Bks., La., 2.05 in.; 18th, Baton Rouge Barracks, 6.70 in.; 19th, Chicago, Ill., 2.19 in.; Detroit, Mich., 2.02 in.; Anna, Ill., 2.88

in.; Sandusky, Ohio, 2.42 in.; Toledo, Ohio, (19th and 20th,) 3.52 in.; 20th, Fort Porter, N. Y., 2.14 in.; 21st, Norfolk, Va., 2.27 in.; Omaha, Neb., 2.14 in.; Cape Henry, Va., 2.28 in.; 22d, Wood's Holl, Mass., 2.63 in.; 25th, New Orleans, La., 2.53 in.; Mt. Sterling, Ill., 2.20 in.; Galveston, Texas, (24th and 25th,) 9.43 in.; Baton Rouge Barracks, La., 2.50 in.; 26th, Norfolk, Va., 1.97 in.; Smithville, N. C., 2.20 in.; 29th, Vicksburg, Miss., 1.94 in.; Baton Rouge Barracks, La., 2.60 in.; 30th, New Orleans, La., 3.52 in.; Indianola, Texas, 3.24 in.; Galveston, Texas, 2.12 in.; most of the smaller rain-falls here noted fell in the course of a few hours.

Large Monthly Rain-falls.—The following stations report large monthly rain-falls: Galveston, 17.39 inches; Alpena, 13.18 in.; Indianola, 11.75 in.; Denison, 10.74 in.; New Haven, 10.09 in.; Pilot Point, 10.42 in.; St. Marks, 10.61 in.; Baton Rouge, 16.75 in.; Quitman, Ga., 18.03 in.; Auburn, N. H., 18.15 in.; White Plains, N. Y., 18.09 in.; Pelham, N. Y., 10.43 in.

Small Monthly Rain-falls.—The following stations report little or no rain during the month: Camp Verile, 0.43 inches; Eagle Pass, 0.35 in.; Edinburg, 0.32 in.; Florence, 0.49 in.; Phoenix, none; Stanwix, none; Tucson, 0.46 in.; Winnemucca, 0.02 in.; Wickenburg, none; Yuma, none; Alcatraz Island, 0.40 in.; Salinas City, 0.12 in.

Droughts.—The distribution of rain, as given on the accompanying chart, shows slight deficiencies of rain to have occurred in the Ohio and St. Lawrence valleys; but no special reports of droughts, as affecting vegetation, have been received, except such notes as are referred to in the chapter on the height of water in rivers.

Floods.—Destructive floods attended the heavy rains, of the first four days of the month, in the East Gulf and Atlantic states, but in general, the excess of rain has served only to keep the streams very high and promote vegetation up to the last days of autumn.

Hail occurred on the 3rd, in Iowa, Mo.; 5th, Neb., N. Y.; 14th N. C.; 20th, Ky., Mo.; 22nd, Me., Mass.; 25th, Me., Tex., 26th, Neb., N. Y.

Snow.—Snow-falls during the month occurred as follows: on the 2nd, Dak.; 4th, Pa.; 5th, Wy. Ty., Wis.; 6th, N. Y., Pa., Wy. Ty., Vt.; 8th, Mich.; 10th, Ind.; 11th, Col.; 12th, Col., Wy. Ty.; 13th, Col., Wy. Ty.; 14th, Dak., Neb., Wy. Ty.; 15th, Wy. Ty., Neb.; 18th, Col., Neb., Wy. Ty.; 19th, Col., Neb., Wy. Ty.; 20th, Wy. Ty.; 21st, Me.; 22nd, Me., Mass., N. H., N. Y., Ohio, R. I.; 23rd, Pa.; 25th, Me., N. Y.; 28th, Me., Wy. Ty.; 27th, Col., Neb.; 28th, Col., Neb., Utah, Wy. Ty.; 29th, Col., Wy. Ty.; 30th, Col., Minn., Wy. Ty.; 31st, Col., Neb., Wy. Ty. At the end of the month snow was one to three inches deep in Utah and Nevada, and four inches deep in Vermont. Two feet of snow had fallen on Pike's Peak at the end of the month, where winter had set in unusually early.

Rainy Days.—The number of days on which rain has fallen as recorded by Signal Service observers ranges as follows: For New England, 15 to 18; Middle Atlantic States, 11 to 18; Lower Lake region, 15 to 19; Tennessee and the Ohio valley, 10 to 15; South Atlantic and East Gulf States, 9 to 15; West Gulf coast, 12 to 18; Upper Mississippi and Lower Missouri valleys, 5 to 13.

Cloudy Days.—The number of cloudy days is reported by volunteer observers as follows: New England, 5 to 14; Middle States, 13 to 19; South Atlantic States, 6 to 10; East Gulf States, 8 to 20; West Gulf States, 12 to 15; Tennessee and the Ohio valley, 6 to 10; Lower Lakes, 10 to 12; Upper Lake region, 13 to 18; the Northwest, 10 to 20.

RELATIVE HUMIDITY.

The average relative humidity for the month ranges about as follows: For New England, 71 to 78; Middle Atlantic States, 70 to 76; South Atlantic States, 63 to 79; East Gulf States, 72 to 79; West Gulf coast, 73 to 81; Western Texas, 54 to 75; Tennessee and the Ohio valley, 65 to 72; Lower Lakes, 68 to 79; Upper Lakes, 69 to 82; Upper Mississippi valley, 70 to 75; Lower Missouri valley, 70 to 74; the California coast, 71 to 74; the Sacramento valley, 42 to 49. High stations report the following average percentages, not corrected for altitude: Cheyenne, 61; Denver, 50; Mt. Washington, 90; Pike's Peak, 66; Salt Lake City, 41; Santa Fe, 48; Winnemucca, 39.

WINDS.

In General.—The prevailing winds at Signal Service stations, are shown by the arrows on Chart No. II, from which it will be seen that they have been southeasterly west of the Lower Mississippi; northerly in the Northwest and Upper Lake region; southerly in the Lower Lake region and Middle States; and northerly in New England, the South Atlantic and East Gulf States.

Total Movements.—The largest total movements for the month, have been, as follows: Barnegat, 10,208 miles; Cape Henry, 10,356; Cape Lookout, 10,814. Cape May, 12,212; Dodge City, 10,078; Indianola,